SR-Det

Muhsin Fatih, Kshitiz Malhotra

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Abstract

Image Super-Resolution (SR) is an important class of image processing techniques to enhance the resolution of images and videos in computer vision. The classical computer vision way of solving this problem is through interpolation techniques like nearest-neighbor interpolation, bi-linear interpolation and bi-cubic interpolation. However, these interpolation-based techniques don't add any more information to the image, and they introduce side effects such as computational complexity, noise amplification, blurring results, etc[4]. In our work, we investigate into a deep learning approach, SR-GAN[1] using Generative Adversarial Networks, to improve the quality of the low resolution image. In particular, we would be testing the strengths of this super-resolution technique to the domain of surveillance by enhancing the quality of low-resolution regions of interest in surveillance footage. We train the model on high-resolution surveillance images, VIRAT Ground Dataset [2], with various resolution sizes focusing on objects like cars and pedestrians so that we can test on low resolution images, VIRAT Ariel Dataset[2] which are taken from higher altitude, focusing on the same objects. In order to measure the strength of the reconstructed image from the Generator, we pass the image focusing on the object to YOLOV3[3] and evaluate the performance of the SR-GAN with certain resolution.

References

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